What is claimed is:

1. A tunable laser comprising a laser source for providing light with a wavelength along an optical path, a diffractive element positioned in the optical path and spaced from the laser source for redirecting the light received from the laser source, a reflective element positioned in the optical path and spaced from the diffractive element for receiving the light redirected by the diffractive element and for further redirecting the light back along the optical path to the reflective element, the diffractive element receiving the light further redirected by the reflective element and returning the light along the optical path to the laser source whereby the optical path created by the laser source, the diffractive element and the reflective element causes the light to lase at the wavelength, and at least one microactuator coupled to one of the diffractive element and the reflective element for moving such element to select the wavelength of the light.

2. The tunable laser of Claim 1 wherein the optical path extends from the laser source to the diffractive element and then to the reflective element along an optical path length and wherein the wavelength has a half wavelength and can be selected from a range of wavelengths, the at least one microactuator moving said one of the diffractive element and the reflective element so that the optical path length equals an integer number of half wavelengths of the selected wavelength over the range of wavelengths.

3. The tunable laser of Claim 2 wherein the range of wavelengths extends from approximately 1520 nanometers to approximately 1560 nanometers.

4. The tunable laser of Claim 1 wherein the selected wavelength is 1540 nanometers.

5. The tunable laser of Claim 1 wherein the at least one microactuator includes a microactuator coupled to the reflective element for moving the reflective element.

6. The tunable laser of Claim 1 wherein the at least one microactuator includes a

microactuator coupled to the reflective element for rotating the reflective element about a pivot point.

7. The tunable laser of Claim 6 wherein the pivot point is spaced apart from the microactuator.

8. The tunable laser of Claim 6 further comprising means carried by the substrate for translating the reflective element relative to the diffractive element.

9. The tunable laser of Claim 1 wherein the at least one microactuator includes a first microactuator coupled to the reflective element for rotating the reflective element about a pivot point and a second microactuator coupled to the reflective element for translating the reflective element relative to the diffractive element.

10. The tunable laser of Claim 1 wherein the at least one microactuator includes a micromachined actuator.

11. The tunable laser of Claim 1 wherein the at least one microactuator is an electrostatic microactuator having interdigitatable comb fingers.

12. The tunable laser of Claim 11 further comprising a controller for measuring the capacitance between the interdigitatable comb fingers and providing a drive signal to the at least one microactuator in response to the signal.

13. The tunable laser of Claim 1 further comprising a counterbalance carried by the substrate and coupled to the at least one microactuator and the one of the diffractive element and the reflective element for inhibiting undesirable movement of the one of the diffractive element and the reflective element in response to externally applied accelerations to the tunable laser.

14. The tunable laser of Claim 1 wherein the reflective element includes a

retroreflector.

15. The tunable laser of Claim 1 wherein the laser source includes a Fabry-Perot laser.

16. The tunable laser of Claim 1 further comprising an optical sensor for sensing a light beam reflected from one of the diffractive element and the reflective element so as to measure the wavelength of the light and producing an error signal corresponding to any deviation between the measured wavelength and the selected wavelength and a controller electrically coupled to the optical sensor and the at least one microactuator for receiving the error signal and providing a control signal to the at least one microactuator in response to the error signal.

17. The tunable laser of Claim 16 wherein the optical sensor is a position sensing device.

18. The tunable laser or Claim 17 further comprising an additional laser source for supplying the light beam.

19. The tunable laser of Claim 17 wherein the light beam is supplied by the laser source.

20. The tunable laser of Claim 16 wherein the optical sensor is a wavelength locker.

21. The tunable laser of Claim 1 further comprising an optical sensor for sensing the light so as to measure the wavelength of the light and producing an error signal corresponding to any deviation between the measured wavelength and the selected wavelength and a controller electrically coupled to the optical sensor and the at least one microactuator for receiving the error signal and providing a control signal to the at least one microactuator in response to the error signal.

22. The tunable laser of Claim 21 wherein the optical sensor is selected from the group consisting of a position sensing device and a wavelength locker.

23. The tunable laser of Claim 1 further comprising a collimating lens disposed between the laser source and the diffractive element and an additional microactuator coupled to the collimating lens for moving the collimating lens to enhance the return of the light to the laser source.

24. The tunable laser of Claim 23 wherein the additional microactuator is an electrostatic microactuator.

25. The tunable laser of Claim 23 further comprising a counterbalance coupled to the collimating lens and the additional microactuator for inhibiting undesirable movement of the collimating lens in response to externally applied accelerations to the collimating lens.

26. The tunable laser of Claim 1 further comprising an electroabsorptive modulator disposed in the optical path.

27. The tunable laser of Claim 26 wherein the electroabsorptive modulator is disposed between the laser source and the diffractive element.

28. A tunable laser comprising a laser source for providing light with a wavelength along an optical path, a diffractive element positioned in the optical path and spaced from the laser source for redirecting the light received from the laser source, a reflective element positioned in the optical path and spaced from the diffractive element for receiving the light redirected by the diffractive element and for further redirecting the light back along the optical path to the reflective element, the diffractive element receiving the light further redirected by the reflective element and returning the light along the optical path to the laser source whereby the optical path created by the laser source, the diffractive element and the reflective element causes the light to lase at the wavelength, and

micromechanical means coupled to one of the diffractive element and the reflective element for rotating and translating such element to select the wavelength of the light.

29. The tunable laser of Claim 28 wherein the micromechanical means includes a microactuator for rotating such element.

30. The tunable laser of Claim 29 wherein the micromechanical means includes an additional microactuator for translating such element.

31. A tunable laser comprising a laser source for providing light with a wavelength along an optical path, a diffractive element positioned in the optical path and spaced from the laser source for redirecting the light received from the laser source, a reflective element positioned in the optical path and spaced from the diffractive element for receiving the light redirected by the diffractive element and for further redirecting the light back along the optical path to the reflective element, the diffractive element receiving the light further redirected by the reflective element and returning the light along the optical path to the laser source whereby the optical path created by the laser source, the diffractive element and the reflective element causes the light to lase at the wavelength, a collimating lens disposed between the laser source and the diffractive element and a microactuator coupled to the collimating lens for moving the collimating lens to enhance the return of the light to the laser source.

32. The tunable laser of Claim 31 wherein the microactuator is an electrostatic microactuator.

33. The tunable laser of Claim 31 further comprising counterbalancing means coupled to the microactuator and to the collimating lens for inhibiting undesirable movement of the collimating lens in response to externally applied accelerations to the tunable laser.

34. The tunable laser of Claim 31 further comprising a power detector for monitoring the power of the light and a controller electrically coupled to the power detector

and the microactuator for providing a control signal to the microactuator for moving the collimating lens to increase the power of the light.